THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 22

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DAVID C. McCLURE

Appeal No. 1997-1644
Application No. 08/367,681[1]

ON BRIEF

Before KRASS, FLEMING, and BARRY, Administrative Patent Judges.

BARRY, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal under 35 U.S.C. § 134 from the final rejection of claims 1-22. We affirm.

BACKGROUND

[1] The application was filed on December 30, 1994. It is a continuation of Application Serial No. 07/938,401, which was filed on August 31, 1992 and is now abandoned.

The invention at issue in this appeal increases the operating speed of an output driver integrated circuit (IC). The physical construction of ICs causes variations in the inherent signal delays between the ICs' output drivers and its output pins. No matter how much the output drivers are slowed, the signal delay to some output pins is longer than it is to others.

The invention capitalizes on this phenomenon to speed operation of an IC. More specifically, the invention provides different amounts of slew-rate limiting to different output drivers of the IC to ensure that all the ICs' output pins are driven to change state at approximately the same time. Reducing the output switching speed of only a few of the output drivers, moreover, decreases inductive switching noise and reduces power supply bounce.

Claim 9, which is representative for our purposes, follows:

9. A semiconductor device, comprising:

a plurality of output drivers; and

> means connected to said output drivers for controlling the slew rates of said output drivers such that the slew rate of at least one of said output drivers is different than the slew rate of a different said output driver, wherein the power supply oscillation settling time is reduced.

Besides admitted prior art (APA), the reference relied on in rejecting the claims follows:

Boomer 5,218,239 June 8, 1993
(filed Oct. 3, 1991).

Claims 1-22 stand rejected under 35 U.S.C. § 103 as obvious over APA in view of Boomer. (First Action on Merits at 2.) Rather than repeat the arguments of the appellant or examiner in toto, we refer the reader to the brief and answer for the respective details thereof.

OPINION

In reaching our decision in this appeal, we considered the subject matter on appeal and the rejection and evidence advanced by the examiner. Furthermore, we duly considered the arguments of the appellant and examiner. After considering the totality of the record, we are not persuaded that the

examiner erred in rejecting claims 1-22. Accordingly, we affirm. Our opinion addresses the grouping and obviousness of the claims.

Grouping of the Claims

37 C.F.R. § 1.192(c)(7), as amended at 60 Fed. Reg. 14518 (Mar. 17, 1995), was controlling when the appeal brief was filed. Section 1.192(c)(7) stated as follows.

> For each ground of rejection which appellant contests and which applies to a group of two or more claims, the Board shall select a single claim from the group and shall decide the appeal as to the ground of rejection on the basis of that claim alone unless a statement is included that the claims of the group do not stand or fall together and ... appellant explains why the claims of the group are believed to be separately patentable. Merely pointing out differences in what the claims cover is not an argument as to why the claims are separately patentable.

In addition, claims that are not argued separately stand or fall together. In re Kaslow, 707 F.2d 1366, 1376, 217 USPQ

1089, 1096 (Fed. Cir. 1983). When the patentability of dependent claims in particular is not argued separately, the claims stand or fall with the claims from which they depend. In re King, 801 F.2d 1324, 1325, 231 USPQ 136, 137 (Fed. Cir. 1986); In re Sernaker, 702 F.2d 989, 991, 217 USPQ 1, 3 (Fed. Cir. 1983).

The appellant states that the claims should be considered in the following groups for the appeal:

- claims 1-10 and 12-22
- claim 11.

(Appeal Br. at 5.) Conversely, he omits a statement that claims 1-10 and 12-22 do not stand or fall together and reasons why claims 1-8, 10, and 12-22 are separately patentable. Therefore, we consider the claims to stand or fall together in these groups, with claims 9 and 11 as the respective representative claims of the two groups. Next, we address the obviousness of the claims.

Obviousness of the Claims

We begin by finding that the references represent the level of ordinary skill in the art. See In re GPAC Inc., 57 F.3d 1573, 1579, 35 USPQ2d 1116, 1121 (Fed. Cir. 1995) (finding that the Board of Patent Appeals and Interference did not err in concluding that the level of ordinary skill in the art was best determined by the references of record); In re Oelrich, 579 F.2d 86, 91, 198 USPQ 210, 214 (CCPA 1978) ("[T]he PTO usually must evaluate ... the level of ordinary

skill solely on the cold words of the literature."). Of course, every patent application and reference relies on the knowledge of persons skilled in the art to complement its disclosure. In re Bode, 550 F.2d 656, 660, 193 USPQ 12, 16 (CCPA 1977). Such persons must be presumed to know something about the art apart from what the references teach. In re Jacoby, 309 F.2d 513, 516, 135 USPQ 317, 319 (CCPA 1962). We address the appellant's arguments regarding the obviousness of claims 1-10 and 12-22 and regarding the obviousness of claim 11.

Claims 1-10 and 12-22

The appellant argues, "Claims 1-10 and 12-22 provide that at least two output drivers have different slew-rate limiting applied to them; such a concept is neither shown nor suggested by Boomer." (Appeal Br. at 8.) He adds, "Without some motive or incentive in the prior art for modifying the output driver of Boomer (1) to apply to multiple signals from multiple output pins, and (2) to independently delay signals from multiple output pins, the Examiner has not established a *prima*

facie case of obviousness." (Reply Br. at 5-6.) The examiner's reply follows:

> [I]t is noted that the Boomer reference was intended as an output driver for an interface. Nowhere does Boomer advocate employing his design only once for a singular output terminal and using another's design for every subsequent output terminal. Therefore, if an interface has multiple output drivers performing at respective multiple outputs, it is reasonable to assume that it

> would be within the scope of the Boomer disclosure to accept the applicability of his driver in every capacity for which an output driver is required. Further, it is illogical to assume that Boomer would intend all output buffers to be adjusted the same. (Examiner's Answer at 3.)

We agree with the examiner.

Representative claim 9 specifies in pertinent part the following limitations: "a plurality of output drivers" and "means ... for controlling the slew rates of said output drivers such that the slew rate of at least one of said output drivers is different than the slew rate of a different said output driver ...."

The appellant errs in considering Boomer individually. "Non-obviousness cannot be established by attacking references individually where the rejection is based upon the teachings of a combination of references." In re Merck & Co., 800 F.2d 1091, 1097, 231 USPQ 375, 380 (Fed. Cir. 1986) (citing In re Keller, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981)). In determining obviousness, furthermore, references are read not

in isolation but for what they fairly teach in combination with the prior art as a whole. Id., 231 USPQ at 380.

Here, the rejection is based on APA and Boomer in combination with the prior art as a whole. The appellant admits that a semiconductor device having a plurality of output drivers was known at the time of invention. (Spec. at 2-3 (referring to "output drivers").) He also admits that the problem that "the outputs at the output pins of the integrated circuit package do not all change state at the same time," (Spec. at 3), was also known then. These admissions, i.e., the APA, would have suggested a plurality of output drivers, each having a slew rate.

The appellant further errs in determining the content of the prior art. A reference must be considered as a whole for what it reveals "to workers in the art." Panduit Corp. v. Dennison Mfg. Co., 810 F.2d 1561, 1566, 1 USPQ2d 1593, 1595 (Fed. Cir. 1987).
Such persons, moreover, must be presumed to know something about the art apart from what the reference teaches. Jacoby, 309 F.2d at 516, 135 USPQ at 319.

Here, the appellant admits, "The Boomer reference is directed to control of slew rates of output drivers. Boomer provides an output driver which can be programmed ... to give faster or slower slew rates for the output drivers." (Appeal Br. at 5.) The reference teaches, moreover, that its invention "is particularly intended for high speed switching, high drive digital output buffer circuit**s**." Boomer, col. 2, ll. 44-46 (emphasis added). The teaching of plural "digital output buffer circuits," Id. at l. 46, would have suggested the application of Boomer's programmable slew rates to a plurality of output circuits. This suggestion would have motivated one of ordinary skill in the art to equip each of APA's output drivers with Boomer's programmable slew rate.

Workers in the art, moreover, would have known that when Boomer was applied to the plurality of output circuits, the slew rates of the output circuits would have been adjusted individually and differently to achieve uniform outputs from the output circuits. This knowledge would have suggested programming the slew rates of APA's output drivers such that the slew rate of at least one output driver is different than

the slew rate of a different one. Therefore, the teachings of the combinations of references in combination with the prior art as a whole would have suggested a plurality of output drivers and means for controlling the slew rates of said output drivers such that the slew rate of at least one of said output drivers is different than the slew rate of a different said output driver as claimed.

Next, we address the appellant's arguments regarding the obviousness of claim 11.

Claim 11

The appellant makes the following argument.

> Claim 11 adds the further limitation that the differential slew-rate limiting is programmed in at the time device interconnect is formed; Boomer teaches away from this concept by providing that all output drivers are programmed to have equal slew-rate limiting at the time the device is used, using a control signal. (Appeal Br. at 8.)

He adds, "a circuit which must be programmed for each use does not render obvious a circuit which needs only be programmed once, during fabrication." (Reply Br. at 6.) The examiner's reply follows:

> ... Boomer merely preserves the option of programming the driver during use. Certainly, they could be programmed any time prior to that if the additional feature of flexibility was not needed. Moreover, appellant is touting the commonplace method of programmability. If the flexibility of programming provided by Boomer was superfluous to the application, then it would have been obvious to Boomer to program the circuit when it was most convenient with the motivation of yielding to the particular requirements of the application. (Examiner's Answer at 4.)

We agree with the examiner.

Claim 11 specifies in pertinent part that the "means for controlling the slew rates of said output drivers includes control circuitry containing resistors programmable by interconnect definition during device fabrication."

The appellant again errs in determining the content of the prior art. In particular, his characterization of Boomer as "a circuit which must be programmed for each use," (Reply Br. at 6), is specious. Workers in the art would have known that the reference's programmable resistors, R_P and R_N, were initially programmed to achieve an acceptable slew rate. Once

that rate was achieved, further programming was unnecessary. Workers in the art would also have known that a circuit assembler at the time of fabrication would be best equipped to program the resistors. Therefore, the teachings of the combinations of references in combination with the prior art as a whole would have suggested that the means for controlling the slew rates of said output drivers includes control circuitry containing resistors programmable by interconnect definition during device fabrication as claimed.

Therefore, we affirm the rejection of claims 1-22 under 35 U.S.C. § 103 as obvious over APA in view of Boomer. We end by noting that the affirmance is based only on the arguments made in the brief. Arguments not raised therein are not before us, are not at issue, and are thus considered waived.

CONCLUSION

To summarize, the examiner’s rejection of claims 1-22 under 35 U.S.C. § 103 is affirmed.

No period for taking subsequent action concerning this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

ERROL A. KRASS Administrative Patent Judge	)
MICHAEL R. FLEMING Administrative Patent Judge	) BOARD OF PATENT APPEALS AND INTERFERENCES
LANCE LEONARD BARRY Administrative Patent Judge	)

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